

IOWA HIGHWAY RESEARCH BOARD (IHRB)

Minutes of April 25, 2014

Regular Board Members Present

A. Abu-Hawash
S. Okerlund
D. Schnoebelen
R. Kieffer
R. Knoche

D. Miller
W. Weiss
K. Mayberry
R. Fangmann

Alternate Board Members Present

S. Schram for K. Jones
D. Sprengeler for R. Younie
P. Mouw for P. Assman

J. Thorius for L. Roehl
E. W. Klaiber for T. Wipf

Members with No Representation

M. Kennerly

Secretary - M. Dunn

Visitors

Leighton Christiansen
Mike Nop
Melissa Serio
David White
Andy Wilson

Iowa Department of Transportation
Iowa Department of Transportation
Iowa Department of Transportation
Iowa State University
FHWA

The meeting was held at the Iowa Department of Transportation Ames Complex, Materials East/West Conference Room, on Friday, April 25, 2014. The meeting was called to order at 9:00 a.m. by Chairperson Kevin Mayberry with an initial number of 12 voting members/alternates at the table.

Minutes

Motion to approve Minutes from the March 28, 2014 meeting

Motion to Approve by R. Knoche; 2nd A. Abu-Hawash
Motion carried with 12 Aye, 0 Nay, 0 Abstaining.

*****2 members joined the table. Total voting members = 14.**

PROPOSAL, “*Flood-Estimation Comparisons for Small Drainage Basins in Iowa*”, David Eash, U.S. Geological Survey, (\$27,840)

BACKGROUND

With the implementation of Iowa StreamStats and the publication of new flood-estimation regression equations for Iowa (Eash and others, 2013), the Iowa Department of Transportation (IDOT) needs to formulate a policy recommendation about which flood-estimation methods to use for drainage areas less than 2 square miles and for drainage areas between 2 and 20 square miles. The StreamStats flood-estimation equations are applicable to drainage areas as small as 0.05 to 0.08 square miles depending on which of the three flood regions an ungaged site is located within. Traditionally, IDOT has used the Iowa Runoff Chart flood-estimation method for drainage areas less than 2 square miles. Regression equations from Lara (1987) have also been used for small drainage basins in Iowa. There is a need to compare flood estimates calculated from different flood-estimation methods to determine which flood-estimation methods provide the best estimates for small drainage basins in Iowa.

OBJECTIVES

The proposed study will perform two sets of flood-estimation comparisons. First, flood estimates calculated from five different flood-estimation methods for streamgages in Iowa with drainage areas less than about 2 square miles will be compared to flood estimates calculated at the streamgages using expected moments algorithm/multiple Grubbs-Beck test (EMA/MGB), annual-exceedance-probability (AEP) streamgage analyses.

Second, flood estimates calculated from four different flood-estimation methods for streamgages in Iowa with drainage areas between about 2 and 20 square miles will be compared to flood estimates calculated at the streamgages using EMA/MGB, AEP streamgage analyses.

DISCUSSION

Q. Why is the ema/mgb a better test relative to the other five?

A. We have to make the assumption that the flood sequence analysis from the actual streamgage data is our best estimate at these gage sites then we will compare the estimates from the other four or five flood estimated methods to see how close they compare to the EMA methods.

Q. Do you know how long the period of record is for the gages?

A. Yes, we require at least 10 years of record to run a frequency analysis. All of the gages have at least 20 years of record.

Q. Are there plans on sharing this with the flood center because I know they would be interested?

A. Yes, once we have the preliminary results and share this with the Iowa DOT then they could share the results with the Iowa flood center.

Motion to Approve by W. Weiss; 2nd P. Mouw
Motion carried with 14 Aye, 0 Nay, 0 Abstaining.

PROPOSAL, “*Embankment Quality and Assessment of Moisture Control Implementation*”, David White, Iowa State University/InTrans, (\$155,795)

BACKGROUND

A specification for contractor moisture quality control (QC) in roadway embankment construction has been in use for approximately 10 years in Iowa on 190 projects. The use of this QC specification and the development of the DOT's soils certification program originated from Iowa Highway Research Board embankment quality research projects. Since this research, the DOT has applied compaction with moisture control on most embankment work under pavements.

A review by Iowa State University on a few recent grading projects provided data indicating that embankments are frequently constructed outside moisture control limits, even though the contractor QC testing and limited quality assurance (QA) testing showed all work was being performed within the control limits.

OBJECTIVES

The objective of this research is to review grading projects statewide and assess the implementation of compaction with moisture control and contractor quality control operations during embankment construction. Based on the findings, recommendations will be provided to modify the specification language as needed and/or field testing methods to ensure compliance with the moisture control criteria.

In order to accomplish these objectives, a work plan will be developed consisting of the following list of tasks:

1. Review existing literature on moisture/density control best practices
2. Identify 8 to 12 grading projects representing the range of Iowa soil conditions
3. Develop a check list of information needed at each project site
4. Conduct independent field and laboratory testing at selected projects
5. Compare findings of testing results with the project QC and QA measurements
6. Determine if the field process or specifications need to be updated based on the findings
7. Provide report and presentation deliverables

DISCUSSION

Q. What are the contractors doing now when they measure their moisture content and compaction?

A. There are different approaches. You can hire a consultant to test with a nuclear density gage.

Projects that just require moisture control simply can collect a bag sample of soil then use a variety of approved methods for drying the soil, a lot of times this is done on site.

Q. Are we having failures in the road consistently that raised the question?

A. I would not say we are having catastrophic failures but if we do not have a good subgrade or embankment this will affect our road performance.

Q. Is it the difference between the methods used or where the samples are?

A. We would like to find out through the research being done.

Q. How is this being done with the contractors how do we identify the ramifications?

A. I think this study will find if there are problems, and if there is a wide spread problem of testing not being done according to our requirements.

Q. We are not there to witness tampering?

A. We only do 1 QA for every 10 QC test so the other 9 we might not be at site.

Q. Does the DOT come up with the testing locations?

A. The DOT specifications spell out the testing needs to be random not defined to a location.

Motion to Approve by D. Miller; 2nd R. Fangmann

Motion carried with 14 Aye, 0 Nay, 0 Abstaining.

FHWA STIC Incentive funds for 2014

- ✓ Use of 3D in bridge design
- ✓ Design and performance verification of a bridge column/footing/pile
System for accelerated bridge construction

Motion to Approve by A. Abu-Hawash; 2nd P. Mouw

Motion carried with 14 Aye, 0 Nay, 0 Abstaining.

NEW BUSINESS

Mark has accepted the Resident Construction Engineer position in Marshalltown and stated this will be his last IHRB Board meeting. He stated it has been a great pleasure to work with the board over the last 16 years. It has been a great collaboration between the City, County, Dot and Universities all working together for one good cause. He will be working with Vanessa to transition over some of the coordination in the interim.

ADJOURN

The next meeting of the Iowa Highway Research Board will be held Friday, May 30, 2014, in the East/West Materials Conference Room at the Iowa DOT. The meeting will begin promptly at 9 a.m.



Mark J. Dunn, IHRB Secretary